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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,985	03/22/2005	Marc Airiau	1022702-000099	3366
21839 7590 09/12/2007 BUCHANAN, INGERSOLL & ROONEY PC POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404			EXAMINER LE, HOA T	
			ART UNIT 1773	PAPER NUMBER
			NOTIFICATION DATE 09/12/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<div style="border: 1px solid black; width: 150px; height: 20px; margin: 0 auto;"></div> <p style="text-align: center;">Office Action Summary</p>	Application No. 10/501,985	Applicant(s) AIRIAU ET AL.	
	Examiner H. T. Le	Art Unit 1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>July 2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse in the reply filed on June 18, 2007 is acknowledged. The traversal is found persuasive, and the requirement is hereby withdrawn.

Specification

2. The disclosure is objected to because of the following informalities: The pages of the specification are not numbered which could cause confusion later on when reference to certain portion of the specification is necessary. Appropriate correction is required.

Claim Objections

3. Claim 5 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form.

In the instant case, claim 1, upon which claim 5 depends, requires that the metal oxide nanoparticles be in crystalline state, which state constitutes a degree of crystallinity of at least 50% by definition. However, claim 5 describes a degree of crystallinity of below 50% and thus fails to further limit the subject matter of claim 1.

4. Claims 2-16 and 18-26 are objected to because of the following grammatical informality: The article of the preamble of these dependent claims should be "The" not

"A" because it is referred to a definite subject, i.e. "material of claim 1" or "process of claim 17".

Claim Rejections - 35 USC § 112

5. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Claim 11 fails to correspond in scope with that which Applicant regard as the invention. The specification describes a preferred embodiment in which the mineral phase "is at least partially constituted by silica" (page 11, lines 20-21), which means that the mineral phase is silica-based. Claim 11 on the other hand recites that the mineral phase "further comprises silica", which has the meaning that the silica can be present as an additive but does not form the basic constituent of the mineral phase. Thus claim 11 is different from what is defined as Applicant's invention.

6. Claims 6, 18, 24 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 6 and 26, it is unclear whether the amount of 0.2% is wt%, vol%, mol% or atm%.

Regarding claim 18, the phrase "in particular" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim 24 is unclear because the term "support" is confusing in the claim context.

Claim 25 is indefinite because the process step "supporting" is not clearly defined.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1-6 and 10-26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-36 of copending Application No. 10/466,592. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims and the referenced claims are directed to the same subject matter; i.e. a mesostructured material comprising a mineral matrix, nanoparticles of a rare earth oxide containing a metallic doping cation, and method of making thereof.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1-6 and 10-26 are rejected under 35 U.S.C. 102(b) as being anticipated by the FR-2819432 patent ("FR'432") or under 35 U.S.C 102(e) as being anticipated by the US Publication No. US 2004/0192947 (US'947).

Note: The US'947 is an English equivalent document of the FR'432; therefore, US'947 is being used as a translation version of the FR'432 patent. Accordingly, only citations of US'947 are being used in these 102 rejections.

Claims 1-2: See US'947, paragraphs [0019] to [0023].

Claim 3: par. [0024]-[0025].

Claim 4: par. [0041]-[0044].

Claim 5 : par. [0045].

Claim 6 : par. [0058].

Claim 10 : See rejection to claim 1 and par. [0061].

Claim 11: par. [0038]-[0039].

Claims 12-13: par. [0060]-[0064].

Claim 14 : par. [0076].

Claim 15 : par. [0053].

Claim 16 : par. [0031].

Claims 17-21 : See US'947, claims 23-33 and par. [0115].

Claims 22-25: par. [0129].

Claim 26: par. [0058]

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO-01/32558A ("WO'558").*

Claim 1: WO'558 teaches a thermally stable mesostructured material comprising a mineral phase and nanoparticles of cerium oxide, cerium oxide, titanium oxide, zirconia or rare earth oxide type. See instant specification, page 4. WO'558 does not teach doping of the nanoparticles; however, doped nanocrystals are known in the art as having superior or at least improved physical, chemical, optical properties to their

undoped counterparts. See for examples, US Patent Nos. 6,623,858; 6,656,588; 6,955,855; or 7,025,943. Therefore, one having ordinary skilled in the art would have found it obvious to replace the undoped nanoparticles taught in WO'558 with doped nanoparticles in order to obtain material with better properties.

13. Other references are cited as art of interest.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. T. Le whose telephone number is 571-272-1511.

The examiner can normally be reached on 10:00 a.m. to 6:30 p.m., Mondays to Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. Thi Le/
H. (Holly) T. Le
Primary Examiner
Art Unit 1773

August 29, 2007

* This reference is described in the present disclosure.